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ABSTRACT

The access barriers to distance education faced by inservice and preservice career and technical education (CTE) majors were examined through a survey of 76 students enrolled in undergraduate- and graduate-level CTE education programs. Completed questionnaires were received from 60 students (response rate, 78.9%). Forty respondents worked full-time; only one was not working. The predominant institutional access barrier identified was difficulty scheduling required "general education" courses. Other highly ranked institutional access barriers included library access, lack of ongoing advising, and technical assistance for problem-solving technology/computer-based issues. Class registration and ease of obtaining grades were not cited as significant institutional access barriers. Job conflict was the highest-ranked student access barrier. Sources of job conflict included the competing interests of students' jobs and the requirements of the classes they were taking, lack of employer support, the issue of family support, and time conflicts. Personal technical competence, tuition costs, or personal financial situations were not highly ranked as student access barriers. The study recommendations included calls for the following items: better coordination of course offerings; library systems whose technological accessibility matches that of the distance courses themselves; more sensitivity to distance students' advising needs; additional competent technical support; and instructor recognition of distance learners' job responsibilities and issues. (Contains 13 references.) (MN)

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Access Barriers to Distance Education Perceived by Inservice and Preservice Career and Technical Education Majors

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Abstract

Increasing competition for students and calls for improved "ease of access" have driven postsecondary education institutions to create innovative approaches to course delivery methodologies and degree requirements. Students want to pursue degrees without relocating to retain their current employment or for other reasons. Many of these students have unique personal and professional circumstances, and may experience access barriers when seeking to enroll and obtain a degree through a university distance education program. Previous research in this area has identified institutional barriers and individual student barriers as the two broad categories of access barriers experienced by students. The purpose of this study was to determine access barriers to distance education. Through survey research, I sought to determine those access barriers, with the goal of recommending solutions for the purposes of improving recruitment and retention.

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Access Barriers to Distance Education Perceived by Inservice and Preservice Career and Technical Education Majors

Introduction

Colleges and universities across the nation have recently faced several changes impacting the nature of courses and degree programs they offer. Ever-increasing competition for students and calls for improved "ease of access" have driven institutions to create innovative approaches to course delivery methodologies and degree requirements. Many students want to pursue degrees without relocating to retain their current employment or for other reasons. Legislators and taxpayers have called for better quality and more accountability in postsecondary education. In response to these pressures, many institutions are seeking to improve their educational programs with new information technology tools (Zirkle & Shoemaker, 1999).

Technology has changed the face of education. Students enrolled in distance education, through telecommunications technology, can have almost the same instructional contact and interaction as the student on campus (Galusha, 1998). These technological changes have also driven the growth of distance learning opportunities, as students who are "time bound" due to job or travel difficulties, or "place-bound" due to geographic location, can now access courses and degree programs at their convenience.

Institutional Access Barriers

This convenience is not without problems. The computer-based technologies that are driving the growth in distance education are so new that there is very little experience, much less systematic data, on which to assess future expectations (Gladieux & Swail, 1999). While both secondary and postsecondary educational institutions have expressed an almost universal desire to explore, develop, and deliver distance education programs of various types, barriers to program implementation have been well documented. Yap (1996) listed several barriers impeding distance education efforts including a lack of equipment and support, scheduling, program costs, instructional concerns, and technical assistance.

Distance education is a cost-intensive business (Hall, 1996). The entry into, and on-going costs of, distance education are substantial. Institutions must make capital investments in computers, central servers and networks, technical assistance services, and continual software upgrades. These costs alone can be barriers for institutions wishing to engage in distance learning.

Scheduling satellite time for distance delivery, planning courses at times convenient for non-traditional learners and having faculty available to teach at "off-times" can be another institutional barrier. Internet courses relieve much of the scheduling constraint, but are still time-intensive for the instructor.

Program development and marketing are yet other institutional barriers. Course materials must be constructed to anticipate the learning problems of distance students. Programs must be designed to meet the education/training needs of a distance education student body that is much more diverse than the traditional on-campus example. Marketing the program to individuals can also be problematic, as students in remote areas may be unfamiliar with the institution offering distance education opportunities.

There are a myriad of instructional barriers. Faculty must be adequately trained to deliver instruction at a distance and continual professional development must be offered to faculty in order to keep up with technological change. Some course content (specific skill development, for example) may not lend itself to distance instruction. Continual professional development must be offered to faculty in order to keep up with technological change.

Technical assistance is the last institutional barrier identified by Yap (1996). Related to program costs, the need for an effective technical assistance network cannot be overstated. Students who

experience frustration with satellite feeds, Internet access, or other problems unique to distance education will not be tolerant for long, and will seek educational opportunity elsewhere. A consistent, reliable network of technical assistance should be in place at the start of any institution's distance education effort, and should be periodically evaluated to ensure ongoing effectiveness.

Student Access Barriers

Galusha (1998) categorized access barriers experienced by students in distance education. The categories included costs and motivators, feedback and teacher contact, student support and services, alienation and isolation, and lack of experience/training.

Knapper (1988) found that distance education students are more likely to have insecurities about learning. Issues of financial cost, disruption of family life, and a lack of employer support were found to contribute to higher dropout rates higher than those for traditional on-campus students.

A lack of feedback and teacher contact is a common barrier. Hillesheim (1998) cited overcoming this issue as essential to student success in distance programs. Lack of eye-to-eye contact, limitations on learning activities and the need for an appropriate response time to student queries has also been identified (Zirkle & Ourand, 1999).

Student services and support involves tutors, advisors and the availability of technical assistance. Many institutions lack the technological infrastructure to support distance education. The distance education explosion has created enrollment surges in some postsecondary institutions, which have been unprepared to address technical support issues.

Distance education limits the extent to which students can reflectively engage in conversation with their classmates. The social interaction that is part of the traditional campus is largely missing from distance education courses. This isolation may result in the feeling that the student does not belong to a scholarly community (Galusha, 1998).

A lack of student training can be another access barrier. Many students, especially older adults, may not be well-versed in the uses of technology. Students are offered course information in an electronic-based format. They must know how to manage this data, in addition to managing their study time.

Career and Technical Education Teacher Preparation and Training

Much has been researched and written lately about the status of career and technical teacher education licensure/certification programs in the United States (Zirkle, 1998). Numerous studies, such as those by Pucel and Flister (1997), along with articles from Lynch (1996), and Hartley, Mantle-Bromley, and Cobb (1996) have documented the recent decline in the number of programs within institutions of higher education.

In addition to the issue of teacher preparation for preservice/novice career and technical education teachers, another issue is that of continuing education and professional development. Most states have requirements for renewal of teaching certificates/licenses. This is usually accomplished through additional coursework, customarily in the form of credit hours or continuing education units (CEUs). Career and technical education teachers have experienced difficulty in this area as well, as a result of the declining numbers of programs in postsecondary educational institutions.

Distance education programs in career and technical education can offer solutions to the problems of teacher certification/licensure and professional development. These programs are generally more flexible with respect to course offerings than traditional on-campus programs. In addition, distance education programs with a focus in career and technical education can alleviate issues such as those identified by Levesque, Lauen, Teitelbaum, Alt, and Librera (2000). Their study suggested a shortage of professional development activities for career and technical education teachers. These teachers were more inclined to look outside their own school districts for learning opportunities.

Statement of the Problem

Many distance education students are nontraditional learners: single parents, transfer students, older adults seeking job skill updates or a career change, students returning to college after a long absence. In addition, most of these students are "place-bound" and/or "time bound". They are unable to attend on-campus. Through innovative delivery methods, distance education programs attempt to meet the learning needs of these individuals. However, the attrition rate of these students can be significant. Many begin a program with specific goals, and do not remain enrolled. It is the researcher's contention that distance education students experience many of the aforementioned access barriers and are unable to continue. However, information and data relative to these access barriers is sparse and inconclusive. The problem, the lack of accurate information regarding access barriers to distance education programs, is the focus of this research.

Purpose and Objectives

The purpose of this research was to obtain information from, and perceptions of, students enrolled in a career and technical education program, relative to access barriers they have experienced in distance education courses. I explored and described these barriers and categorized them thematically, for the purpose of recommending solutions. Specifically, the objectives were:

1. Determine what types of access barriers (institutional or individual student) exist with respect to students enrolled distance education programs.
2. Categorize and rank order barriers.
3. Identify potential causes for these barriers.
4. Recommend possible solutions.

Method

The study relied on a combined email/mail questionnaire to generate data for analysis. Where an active email address was known, students were emailed a copy of the questionnaire and asked to respond, via email, fax or by mail submission. Where an email address was unknown, students were mailed a copy and a response was requested. After two weeks, nonrespondents were contacted by phone or email, and sent a second mailing, in an attempt to ensure participation.

Previous studies (Galusha, 1998; Gladieux & Swail, 1999; Hillesheim, 1998) that addressed access barriers to distance education served as sources of information for the construction of the questionnaire. Previous university-based questionnaires distributed to distance students also served as a source for potential questionnaire content.

Participant Selection

Participants in this study were department majors in the degree area of career and technical education, at the Associate, Bachelor's, and Master's degree levels. The students were enrolled in a state supported, Midwest university, with an enrollment of 11,000 students. The career and technical education program is housed in the Industrial Technology Education (ITE) department, along with programs in technology education and human resource development. These three programs are part of the School of Technology, along with programs in aerospace, construction, electronics, and manufacturing technologies. Enrollment for the Fall of 2000 in the ITE department was approximately 270 students, enrolled part and full-time. It is estimated that 90% of these students have taken at least one course with a distance delivery method. To this point, there has been little research conducted at the departmental level, to determine what barriers to course and program access exist. Two short surveys of "student satisfaction", sponsored by the university to obtain general demographic information about distance students, have been conducted. It is hoped the results of this research will provide the ITE department with more detailed information about these barriers. A mailing list for the career and technical education majors was developed. Seventy-six students were identified and sent a questionnaire.

Several delimitations existed for participant selection. First, the study was limited to one university's department majors and thus, results may not be generalizable. Second, the data was limited to those students enrolled in departmental programs during the academic year 2000-2001.

Outcome Measures

Research instrument. The research instrument consisted of three sections: (a) Demographic information, (b) short statements related to the determination of access barriers to distance education, utilizing a Likert-style ranking system, and (c) open-ended questions, for elaboration on identified access barriers. Statements on the questionnaire described known access barriers and asked respondents to rank these in order of impact on their distance education experience. Barrier categories were broadly classified around the individual student themes identified by Galusha (1998) and the institutional access barriers identified by Yap (1996). The questionnaire used a modified four-point Likert-style ranking. Respondents were asked to rank their perceptions of the impact of selected barriers, on the following scale: 0=No impact, 1=Minor impact (was a barrier on selected occasions), 2=Moderate impact (was a barrier on several occasions), and 3=Major impact (was a consistent barrier). Open-ended questions probed for elaboration on these areas and for possible identification of previously unidentified access barriers.

Instrument validity. The research instrument was examined for face validity by a panel of experts, consisting of university representatives from the School of Technology and the Division of Lifelong Learning where the program was housed. Comments and suggestions for change were solicited and incorporated into the questionnaire where appropriate.

Data Analysis

Data were analyzed in three ways. Demographic data was summarized. Responses to the Likert-style questions were input into the statistical package SPSS and analyzed through basic measures of central tendency. Responses to the open-ended questions were summarized qualitatively and examined for themes, specific data and other information.

Results

Demographic Information

Of the 76 students surveyed, 60 returned a completed questionnaire, for a return rate of 78.9%. All the returned questionnaires were deemed usable, with no missing information. Fifty-one (67.1%) of the questionnaires were returned after the initial mailing, with 9 (11.8%) additional questionnaires received after a second mailing. Thirty-eight (63.3%) respondents were male, while 22 (36.7%) were female. Thirty-six (60%) of the respondents were between the ages of 32-45, and 24 (40%) had previously earned an Associate degree. Thirty-eight (63.3%) of those responding indicated the pursuit of a Bachelor's degree as the primary reason for enrolling in a distance education program, and of the 60 students responding, 56 (93.3%) were pursuing the baccalaureate degree, with only four enrolled in a Master's program. A full two-thirds (40 respondents) indicated they worked 40 hours or more per week. Forty-four (73.3%) of those returning a questionnaire indicated their employment status as professional/technical or managerial. Only one respondent indicated they were not working.

Access Barriers

Institutional access barriers. With respect to institutional access barriers, one specific barrier was predominant (see Table 1). The availability of "general education" courses, such as those found in arts & sciences and the humanities, and a university requirement for graduation, was ranked highly (M=2.57). In the open-ended comments section, many students specifically mentioned difficulties in scheduling these types of courses.

Table 1. Mean Scores for Institutional Access Barriers

Institutional access barriers	*M*
Sufficient numbers of courses scheduled in your major each semester	1.23
Sufficient numbers of courses in other areas (general education, etc.) scheduled each semester	2.57
Cost of tuition	.73
Availability of required classroom materials (textbooks, etc,)	.83
Library access to get resources for class	1.87
Technical assistance for problem-solving technology/computer-based issues	1.64
Student support services–help with initial advising, admissions, financial aid, etc.	1.17
Instructor availability–ease of which you were able to contact an instructor to discuss course concerns	.83
Ease of obtaining grades, transcripts and other course-related records	.50
Ongoing university contact after initial admission (awareness of campus activities/opportunities, etc.)	.80
Ongoing advising – availability of advice on course requirements, availability, etc.	1.67
Registration issues – the ease by which you were able to register for classes	.60

Another highly-ranked barrier was that of library access (M=1.87). While the courses themselves appeared accessible, students felt that library materials were not always available or they were uncertain as to how to obtain them. The issue of ongoing advising (M=1.67) was compounded by distance factors. Students repeatedly expressed frustration over inability to contact instructors, or get phone calls returned. Technical assistance for problem-solving technology/computer-based issues was also ranked highly (M=1.64). While the university has a toll-free technical support line available, a lack of effectiveness and consistency with the system was expressed.

Some areas did not appear to be of concern to students. Most notably, class registration (*M*=.60) and the ease of obtaining grades, transcripts and other course-related records (*M*=.50), were two areas in which students did not list specific problems.

Student access barriers. Job conflict was the most highly-ranked (2.11) student-related barrier (see Table 2). In open-ended comments, many students mentioned the competing interests of their full-time job, and the requirements of the classes they were taking. One student commented, "I work a rotating shift, which causes me to work nights. I have a problem keeping focused and up to date with assignments."

Table 2. Mean Scores for Student Access Barriers

Student access barriers	*M*
Your financial situation (ability to pay for classes and course materials)	.60
Family constraints (lack of support from family, time issues)	1.73
Employer support (the level to which your employer gave any type of Support - financial, time-off, etc.)	.63
Job conflict – the extent to which the demands of your job conflicted with your courses	2.11
Your computer skill level	.93
The computer equipment you had access to for use in the courses	.73
Internet service provider quality	.87
Your ability to utilize the course software (BlackBoard's CourseInfo)	.37
Feedback/instructor contact regarding performance/grading in the course	.93
Clarity of assignments for distance learning	.93
Isolation from other learners/lack of opportunity for interaction with other students	1.65
Applicability of courses to career goals – were the courses relevant to your perceived needs?	.67
Interaction with instructor regarding basic course issues	1.07

An interesting contrast to job conflict was employer support. This barrier category asked respondents to rank their perceptions related to the level of support (financial support, time-off from work, etc.). Respondents did not rank this barrier highly ($\underline{M}$=.63). Second to job conflict was family constraints ($\underline{M}$=1.73). This barrier addressed the issue of family support and time conflicts. One respondent noted, "I am a single parent. The only time I have to access courses is late at night after my children have gone to bed." Isolation from other learners and the lack of opportunity for interaction with other class members was also ranked highly ($\underline{M}$=1.67). One theme prevalent in this area was shared succinctly by one student who said, "There are a lot of knowledgeable people in my classes. The instructors need to find ways to tap into that knowledge."

Student barriers related to their personal technical competence did not rank highly. Computer skill level, computer equipment for student use, Internet service providers and the ability to utilize course software all received rankings $\leq$ 1 on the given Likert-scale. While cost and financial issues have been predominantly mentioned in other studies, respondents in this study did not perceive either cost of tuition as a significant institutional barrier ($\underline{M}$=.73), or individual financial situation ($\underline{M}$=.60) as a highly ranked student barrier.

Conclusions

Data collected and the resulting findings from this study yields useful information for those interested in increasing the accessibility of distance education programs. First, it would appear that there is a disparity between the number of ITE departmental course offerings, and those of other departments offering general education courses required by the university for graduation. Students perceived a much greater difficulty in accessing general education courses than those offered in the chosen major.

While it appears that certain university functions, such as registration and records are relatively unaffected by the influx of distance education students, other areas, such as library access do not share this characteristic. Additionally, the level of technical support given to students at a distance is also perceived as inadequate.

Student advising, while perhaps enough of a difficult issue for on-campus students, appears to a barrier of significance for distance students. Most students have not held a face-to-face conversation with an advisor and it has led some students to feel as one stated, "I'm a student, too. But sometimes, since I'm not there on campus, I feel like I'm not as important to my advisor."

Not surprisingly, job conflicts and family constraints were the top student access barriers. Most of the respondents in the study were older than traditional on-campus students, were working full-time, and had positions of responsibility in their respective organizations. Many indicated significant family responsibilities. All of these student characteristics would have an impact on the accessibility to courses and degree programs.

Many students appear to be struggling with, and are frustrated by, the barrier of isolation from other learners. As stated, most of the respondents in this study were working professionals, and recognized the need for interaction and "networking" with their peers. One student referred to a recent course as "a computerized, correspondence course", and expressed an interest in getting to know all the students better.

Somewhat uncharacteristic of older, non-traditional learners, respondents did not express high barrier rankings relative to computer technology. While they did indicate problems with the available technical support, they perceived their own skills, equipment, and interaction with the course software to not be a significant. With so many of the respondents working full-time, they may utilize computers daily, and thus may be comfortable with them.

Financial barriers also did not seem to affect the participants in this study to a great degree. Again, with many of the respondents working full-time, several indicated they received partial or full tuition reimbursement for successful completion of a course. So, neither the actual cost of tuition or the out-of-pocket expense for coursework was a highly ranked barrier.

Recommendations

Based on the data collected by the research and the conclusions reached, the following recommendations appear warranted:

1. Better coordination of course offerings, specifically in the area of general education, needs to be implemented. It does little good for one university department/program to offer courses leading to a degree at a distance if other university requirements cannot be appropriately completed.

2. Library systems need to "match" the technological accessibility of the courses themselves. Students unable to access instructor-required materials through the library will grow increasingly frustrated. Having specific individuals in the library designated to address distance student's needs is one way to address this barrier.

3. Instructors need to be sensitive to advising needs of distance education students. Students who have an instructor they have never met may be less likely to receive an appropriate level of advising. "On-line" virtual office hours or chat sessions may be one avenue to address this issue.

4. Certainly, the need for competent technical support cannot be overstated. Distance education students, many whom are "non-traditional", older and may be returning to school are likely to have significant technical support needs.

5. Instructors need to recognize the job responsibilities and issues faced by distance education students, many of whom work full-time, and may have a different set of constraints than traditional, on-campus students. Making course assignments as relevant to the student's present job may be an appropriate strategy.

6. Instructors also need to be sensitive to family constraints experienced by distance education students. Many students are married, others are single parents, and most have family issues not shared by younger, more traditional students.

7. Instructors need to seek means of decreasing the amount of isolation perceived by distance students. Chat sessions, discussion boards or having the instructor travel to an off-campus location convenient for distance students are recommended.

Summary

For career and technical education preservice and inservice teachers, distance education programs may offer a way to obtain degrees and courses/professional development required for certification/licensure. As some colleges and universities previously involved with career and technical educator preparation continue to limit or discontinue programs in the discipline, other institutions may be able to utilize distance education programs to reach those individuals in need.

Distance education programs have the potential for reaching many students who otherwise would not be able to access courses due to barriers of time and location. However, as this study has shown, other barriers, both institutional and student-related, can be a hindrance to individuals wishing to pursue these courses. Before these programs are fully effective in meeting the needs of the profession, these barriers need to be addressed, and preferably eliminated.

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